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<110> Xenon Genetics Inc.

<120> Juvenile Hemochromatosis Gene (HFE2A), Expression Products
and Uses Thereof

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            100                 105                 110

Thr Ile Asp Thr Ala Arg Arg Leu Cys Lys Glu Gly Leu Pro Val Glu
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Asp Ala Tyr Phe His Ser Cys Val Phe Asp Val Leu Ile Ser Gly Asp
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Pro Asn Phe Thr Val Ala Ala Gln Ala Ala Leu Glu Asp Ala Arg Ala
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Phe His His His Phe His Thr Cys Arg Val Gln Gly Ala Trp Pro Leu
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Leu Asp Asn Asp Phe Leu Phe Val Gln Ala Thr Ser Ser Pro Met Ala
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Leu Gly Ala Asn Ala Thr Ala Thr Arg Lys Leu Thr Ile Ile Phe Lys
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Asn Met Gln Glu Cys Ile Asp Gln Lys Val Tyr Gln Ala Glu Val Asp
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Val Glu Ile Gln Ala Ala Tyr Ile Gly Thr Thr Ile Ile Ile Arg Gln
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Thr Ala Gly Gln Leu Ser Phe Ser Ile Lys Val Ala Glu Asp Val Ala
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Pro Pro Ser Gln Arg Leu Ser Arg Ser Glu Arg Asn Arg Arg Gly Ala
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Ile Thr Ile Asp Thr Ala Arg Arg Leu Cys Lys Glu Gly Leu Pro Val
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Glu Asp Ala Tyr Phe His Ser Cys Val Phe Asp Val Leu Ile Ser Gly
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Ala His Ser Gln Cys Lys Ile Leu Arg Cys Asn Ala Glu Tyr Val Ser
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Gly Gly Gly Gly Gly Arg Gly Gly Gly Val Gly Ser Gly Gly Leu Cys
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Arg Ala Leu Arg Ser Tyr Ala Leu Cys Thr Arg Arg Thr Ala Arg Thr
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Cys Arg Gly Asp Leu Ala Phe His Ser Ala Val His Gly Ile Glu Asp
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Pro Pro Gly Phe Leu His Cys Ala Ser Phe Gly Asp Pro His Val Arg
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Ser Phe His His His Phe His Thr Cys Arg Val Gln Gly Ala Trp Pro
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Arg Pro Gly Gly Ser Ser Leu Ser Ile Gln Thr Ala Asn Pro Gly Asn
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11

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12

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Lys Ile Leu Lys Cys Asn Ser Glu Phe Trp Ser Ala Thr Ser Gly Ser
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His Ala Pro Ala Ser Asp Asp Thr Pro Glu Phe Cys Ala Ala Leu Arg
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His Asn Cys Ser Lys Asp Gly Pro Thr Ser Gln Pro Arg Leu Arg Thr
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Leu Pro Pro Ala Gly Asp Ser Gln Glu Arg Ser Asp Ser Pro Glu Ile
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Cys His Tyr Glu Lys Ser Phe His Lys His Ser Ala Thr Pro Asn Tyr
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Thr His Cys Gly Leu Phe Gly Asp Pro His Leu Arg Thr Phe Thr Asp
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Arg Phe Gln Thr Cys Lys Val Gln Gly Ala Trp Pro Leu Ile Asp Asn
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Asn Tyr Leu Asn Val Gln Ala Thr Asn Thr Pro Val Leu Pro Gly Ser
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14

Val Lys Met Leu His Ser Asn Lys Asp Lys Leu His Leu Tyr Glu Arg
                405   410   415

Thr Arg Asp Leu Pro Gly Arg Ala Ala Ala Gly Leu Pro Leu Ala Pro
            420   425   430

Arg Pro Leu Leu Gly Ala Leu Val Pro Leu Leu Ala Leu Leu Pro Val
        435   440   445

Phe Cys
    450

<210>   24
<211>   478
<212>   PRT
<213>   Homo sapiens

<400>   24
Met Ile Arg Lys Lys Arg Lys Arg Ser Ala Pro Pro Gly Pro Cys Arg
1   5   10   15

Ser His Gly Pro Arg Pro Ala Thr Ala Pro Ala Pro Pro Ser Pro
            20   25   30

Glu Pro Thr Arg Pro Ala Trp Thr Gly Met Gly Leu Arg Ala Ala Pro
        35   40   45

Ser Ser Ala Ala Ala Ala Ala Ala Glu Val Glu Gln Arg Arg Ser Pro
    50   55   60

Gly Leu Cys Pro Pro Pro Leu Glu Leu Leu Leu Leu Leu Leu Phe Ser
65   70   75   80

Leu Gly Leu Leu His Ala Gly Asp Cys Gln Gln Pro Ala Gln Cys Arg
            85   90   95

Ile Gln Lys Cys Thr Thr Asp Phe Val Ser Leu Thr Ser His Leu Asn
            100   105   110

Ser Ala Val Asp Gly Phe Asp Ser Glu Phe Cys Lys Ala Leu Arg Ala
        115   120   125

Tyr Ala Gly Cys Thr Gln Arg Thr Ser Lys Ala Cys Arg Gly Asn Leu
    130   135   140

Val Tyr His Ser Ala Val Leu Gly Ile Ser Asp Leu Met Ser Gln Arg
145   150   155   160

Asn Cys Ser Lys Asp Gly Pro Thr Ser Ser Thr Asn Pro Glu Val Thr
            165   170   175

His Asp Pro Cys Asn Tyr His Ser His Ala Gly Ala Arg Glu His Arg
            180   185   190

Arg Gly Asp Gln Asn Pro Pro Ser Tyr Leu Phe Cys Gly Leu Phe Gly
        195   200   205

```
Asp Pro His Leu Arg Thr Phe Lys Asp Asn Phe Gln Thr Cys Lys Val
    210                 215                 220

Glu Gly Ala Trp Pro Leu Ile Asp Asn Asn Tyr Leu Ser Val Gln Val
225                 230                 235    .                   240

Thr Asn Val Pro Val Val Pro Gly Ser Ser Ala Thr Ala Thr Asn Lys
                245                 250                 255

Ile Thr Ile Ile Phe Lys Ala His His Glu Cys Thr Asp Gln Lys Val
                260                 265                 270

Tyr Gln Ala Val Thr Asp Asp Leu Pro Ala Ala Phe Val Asp Gly Thr
        275                 280                 285

Thr Ser Gly Gly Asp Ser Asp Ala Lys Ser Leu Arg Ile Val Glu Arg
    290                 295                 300

Glu Ser Gly His Tyr Val Glu Met His Ala Arg Tyr Ile Gly Thr Thr
305                 310                 315                 320

Val Phe Val Arg Gln Val Gly Arg Tyr Leu Thr Leu Ala Ile Arg Met
                325                 330                 335

Pro Glu Asp Leu Ala Met Ser Tyr Glu Glu Ser Gln Asp Leu Gln Leu
                340                 345                 350

Cys Val Asn Gly Cys Pro Leu Ser Glu Arg Ile Asp Asp Gly Gln Gly
        355                 360                 365

Gln Val Ser Ala Ile Leu Gly His Ser Leu Pro Arg Thr Ser Leu Val
    370                 375                 380

Gln Ala Trp Pro Gly Tyr Thr Leu Glu Thr Ala Asn Thr Gln Cys His
385                 390                 395                 400

Glu Lys Met Pro Val Lys Asp Ile Tyr Phe Gln Ser Cys Val Phe Asp
                405                 410                 415

Leu Leu Thr Thr Gly Asp Ala Asn Phe Thr Ala Ala Ala His Ser Ala
                420                 425                 430

Leu Glu Asp Val Glu Ala Leu His Pro Arg Lys Glu Arg Trp His Ile
                435                 440                 445

Phe Pro Ser Ser Gly Asn Gly Thr Pro Arg Gly Gly Ser Asp Leu Ser
    450                 455                 460

Val Ser Leu Gly Leu Thr Cys Leu Ile Leu Ile Val Phe Leu
465                 470                 475

<210>   25
<211>   420
<212>   PRT
<213>   Mus musculus

<400>   25
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16

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Met Gly Gln Ser Pro Ser Pro Arg Ser Pro His Gly Ser Pro Pro Thr
1               5                   10              15

Leu Ser Thr Leu Thr Leu Leu Leu Leu Leu Cys Gly Gln Ala His Ser
            20              25              30

Gln Cys Lys Ile Leu Arg Cys Asn Ala Glu Tyr Val Ser Ser Thr Leu
        35              40              45

Ser Leu Arg Gly Gly Gly Ser Pro Asp Thr Pro Arg Gly Gly Gly Arg
    50              55              60

Gly Gly Leu Ala Ser Gly Gly Leu Cys Arg Ala Leu Arg Ser Tyr Ala
65              70              75              80

Leu Cys Thr Arg Arg Thr Ala Arg Thr Cys Arg Gly Asp Leu Ala Phe
            85              90              95

His Ser Ala Val His Gly Ile Glu Asp Leu Met Ile Gln His Asn Cys
            100             105             110

Ser Arg Gln Gly Pro Thr Ala Pro Pro Pro Ala Arg Gly Pro Ala Leu
    115             120             125

Pro Gly Ala Gly Pro Ala Pro Leu Thr Pro Asp Pro Cys Asp Tyr Glu
    130             135             140

Ala Arg Phe Ser Arg Leu His Gly Arg Ala Pro Gly Phe Leu His Cys
145             150             155             160

Ala Ser Phe Gly Asp Pro His Val Arg Ser Phe His Asn Gln Phe His
            165             170             175

Thr Cys Arg Val Gln Gly Ala Trp Pro Leu Leu Asp Asn Asp Phe Leu
            180             185             190

Phe Val Gln Ala Thr Ser Ser Pro Val Ser Ser Gly Ala Asn Ala Thr
    195             200             205

Thr Ile Arg Lys Ile Thr Ile Ile Phe Lys Asn Met Gln Glu Cys Ile
    210             215             220

Asp Gln Lys Val Tyr Gln Ala Glu Val Asp Asn Leu Pro Ala Ala Phe
225             230             235             240

Glu Asp Gly Ser Ile Asn Gly Gly Asp Arg Pro Gly Gly Ser Ser Leu
            245             250             255

Ser Ile Gln Thr Ala Asn Leu Gly Ser His Val Glu Ile Arg Ala Ala
            260             265             270

Tyr Ile Gly Thr Thr Ile Ile Ile Arg Gln Thr Ala Gly Gln Leu Ser
            275             280             285

Phe Ser Ile Arg Val Ala Glu Asp Val Ala Arg Ala Phe Ser Ala Glu
    290             295             300

Gln Asp Leu Gln Leu Cys Val Gly Gly Cys Pro Pro Ser Gln Arg Leu
305             310             315             320
```

17

Ser Arg Ser Glu Arg Asn Arg Arg Gly Ala Ile Ala Ile Asp Thr Ala
                325   330   335

Arg Arg Leu Cys Lys Glu Gly Leu Pro Val Glu Asp Ala Tyr Phe Gln
            340   345   350

Ser Cys Val Phe Asp Val Ser Val Ser Gly Asp Pro Asn Phe Thr Val
        355   360   365

Ala Ala Gln Thr Ala Leu Asp Asp Ala Arg Ile Phe Leu Thr Asp Leu
    370   375   380

Glu Asn Leu His Leu Phe Pro Ser Asp Ala Gly Pro Pro Leu Ser Pro
385   390   395   400

Ala Ile Cys Leu Val Pro Leu Leu Ser Ala Leu Phe Val Leu Trp Leu
            405   410   415

Cys Phe Ser Lys
            420

<210> 26
<211> 422
<212> PRT
<213> Rattus rattus

<400> 26
Met Gly Asp Arg Gly Arg Ser Pro Ser Leu Arg Ser Pro His Gly Ser
1   5   10   15

Pro Pro Thr Leu Ser Thr Leu Thr Leu Leu Leu Leu Cys Gly Gln
            20   25   30

Ala His Ser Gln Cys Lys Ile Leu Arg Cys Asn Ala Glu Tyr Val Ser
        35   40   45

Phe Thr Leu Ser Leu Arg Gly Gly Gly Ser Pro Asp Thr Pro Arg Gly
    50   55   60

Gly Gly Arg Gly Gly Pro Ala Ser Gly Gly Leu Cys Arg Ala Leu Arg
65   70   75   80

Ser Tyr Ala Leu Cys Thr Arg Arg Thr Ala Arg Thr Cys Arg Gly Asp
            85   90   95

Leu Ala Phe His Ser Ala Val His Gly Ile Glu Asp Leu Met Ile Gln
            100   105   110

His Asn Cys Ser Arg Gln Gly Pro Thr Ala Ser Pro Pro Ala Arg Gly
            115   120   125

Pro Ala Leu Pro Gly Ala Gly Pro Ala Pro Leu Thr Pro Asp Pro Cys
        130   135   140

Asp Tyr Glu Ala Arg Phe Ser Arg Leu His Gly Arg Thr Pro Gly Phe
145   150   155   160

Leu His Cys Ala Ser Phe Gly Asp Pro His Val Arg Ser Phe His Asn
                165   170   175

His Phe His Thr Cys Arg Val Gln Gly Ala Trp Pro Leu Leu Asp Asn
                180   185   190

Asp Phe Leu Phe Val Gln Ala Thr Ser Ser Pro Val Ala Ser Gly Ala
                195   200   205

Asn Ala Thr Thr Ile Arg Lys Ile Thr Ile Ile Phe Lys Asn Met Gln
    210   215   220

Glu Cys Ile Asp Gln Lys Val Tyr Gln Ala Glu Val Asp Asn Leu Pro
225   230   235   240

Ala Ala Phe Glu Asp Gly Ser Val Asn Gly Gly Asp Arg Pro Gly Gly
                245   250   255

Ser Ser Leu Ser Ile Gln Thr Ala Asn Leu Gly Ser His Val Glu Ile
                260   265   270

Arg Ala Ala Tyr Ile Gly Thr Thr Ile Ile Val Arg Gln Thr Ala Gly
        275   280   285

Gln Leu Ser Phe Ser Ile Arg Val Ala Glu Asp Val Ala Arg Ala Phe
    290   295   300

Ser Ala Glu Gln Asp Leu Gln Leu Cys Val Gly Gly Cys Pro Pro Ser
305   310   315   320

Gln Arg Leu Ser Arg Ser Glu Arg Asn Arg Arg Gly Ala Ile Ala Ile
                325   330   335

Asp Thr Ala Arg Arg Leu Cys Lys Glu Gly Leu Pro Val Glu Asp Ala
        340   345   350

Tyr Phe Gln Ser Cys Val Phe Asp Val Ser Val Ser Gly Asp Pro Asn
    355   360   365

Phe Thr Val Ala Ala Gln Ser Ala Leu Asp Asp Ala Arg Val Phe Leu
    370   375   380

Thr Asp Leu Glu Asn Leu His Leu Phe Pro Val Asp Ala Gly Pro Pro
385   390   395   400

Leu Ser Pro Ala Thr Cys Leu Val Arg Leu Leu Ser Val Leu Phe Val
                405   410   415

Leu Trp Phe Cys Ile Gln
                420

<210> 27
<211> 366
<212> PRT
<213> Fugu

<400> 27
Ala Ser Cys Arg Ile Leu Arg Cys Asn Ser Asp Phe Val Ala Ala Thr

19

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1                    5                              10                             15
Leu Asp Leu Gly Ser Ser Ala Gly Ala Gly Gly Gly Ala Pro Leu Ser
            20                  25                  30
Arg Glu Ala Ala Asn Ala Glu Tyr Cys Arg Ala Leu His Ser Tyr Ser
            35                  40                  45
Thr Cys Thr Lys Arg Met Ala Arg Pro Cys Arg Gly Asp Leu Ala Tyr
        50                  55                  60
His Ser Ala Val Gln Gly Ile Glu Asp Leu Leu Ile Gln Tyr Arg Cys
65                      70                  75                  80
Pro Leu Ala Gly Pro Thr Ala Gln Pro Arg Pro Leu Pro Pro Leu Leu
                85                  90                  95
Ser Gly Asp Val Cys Leu Tyr Asp Arg Arg Leu Ala Ala Ala Glu Ala
            100                 105                 110
Pro Gln Pro Asp Tyr Leu His Cys Gly Val Phe Gly Asp Pro His Ile
        115                 120                 125
Arg Thr Phe Asn Asn Asp Phe His Thr Cys Ala Val Gln Gly Ala Trp
    130                 135                 140
Pro Leu Ile Asp Asn Asp Phe Leu Tyr Val Gln Ala Thr Ser Ser Pro
145                 150                 155                 160
Thr Arg Arg Gly Thr Gln Ala Thr Met Leu Thr Lys Ile Thr Val Ile
                165                 170                 175
Val Lys Ser Trp Arg His Cys Val Asp Gln Gln Leu Tyr Gln Ala Glu
            180                 185                 190
Leu Asp Asp Val Pro Met Ala Phe Ala Asp Gly Ser Val Val Ser Gly
        195                 200                 205
Glu Arg Arg Gly Gln His Thr Leu Ala Ile Thr Gln Ser Pro Gly Arg
    210                 215                 220
His Ala Glu Ile Arg Ala Ala His Ile Ala Thr Val Ala Ser Gly Gln
225                 230                 235                 240
Ser Gly Arg Ser Leu Ser Leu Ser Val Tyr Ser Pro Arg Ser Val Val
                245                 250                 255
Glu Ala Phe Gly Pro Glu Gln Asp Leu Gln Leu Cys Met Trp Gly Cys
            260                 265                 270
Pro Ala Ser Gln Lys Leu Ser Thr Pro Pro Pro Thr Ser Ser Thr Phe
        275                 280                 285
Ser Ala Ala Val Leu Ala His Cys Asp Ala Leu Leu Pro Val Arg Asp
        290                 295                 300
Val Tyr His Gln Ala Cys Ile Phe Asp Leu Ile Thr Ser Gly Asp Leu
305                 310                 315                 320
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20

Asn Ser Ser Gly Ala Ala Ile Ser Ala Leu Gln Asp Ala Gln Lys Leu
                325   330   335

Ile Ser Asp Pro Lys Arg Val His Leu Leu Ser Pro Thr Ser Ala Ala
                340   345   350

Gln Arg Glu Asp His Leu Cys Leu Leu Leu Leu Leu Ser
            355   360   365

<210>   28
<211>   432
<212>   PRT
<213>   Chicken

<400>   28
Met Gly Arg Gly Ala Gly Ser Thr Ala Leu Gly Leu Phe Gln Ile Leu
1   5   10   15

Pro Val Phe Leu Cys Ile Phe Pro Pro Val Thr Ser Pro Cys Lys Ile
                20   25   30

Leu Lys Cys Asn Ser Glu Phe Trp Ala Ala Thr Ser Gly Ser His His
                35   40   45

Leu Gly Ala Glu Glu Thr Pro Glu Phe Cys Thr Ala Leu Arg Ala Tyr
        50   55   60

Ala His Cys Thr Arg Arg Thr Ala Arg Thr Cys Arg Gly Asp Leu Ala
65   70   75   80

Tyr His Ser Ala Val His Gly Ile Asp Asp Leu Met Val Gln His Asn
                85   90   95

Cys Ser Lys Asp Gly Pro Thr Ser Gln Pro Arg Leu Arg Thr Leu Pro
                100   105   110

Pro Gly Asp Ser Gln Glu Arg Ser Asp Ser Pro Glu Ile Cys His Tyr
            115   120   125

Glu Lys Ser Phe His Lys His Ser Ala Ala Pro Asn Tyr Thr His Cys
        130   135   140

Gly Leu Phe Gly Asp Pro His Leu Arg Thr Phe Thr Asp Thr Phe Gln
145   150   155   160

Thr Cys Lys Val Gln Gly Ala Trp Pro Leu Ile Asp Asn Asn Tyr Leu
                165   170   175

Asn Val Gln Val Thr Asn Thr Pro Val Leu Pro Gly Ser Ser Ala Thr
                180   185   190

Ala Thr Ser Lys Leu Thr Ile Ile Phe Lys Ser Phe Gln Glu Cys Val
        195   200   205

Glu Gln Lys Val Tyr Gln Ala Glu Met Asp Glu Leu Pro Ala Ala Phe
        210   215   220

Ala Asp Gly Ser Lys Asn Gly Gly Asp Lys His Gly Ala Asn Ser Leu

21

Lys Ile Thr Glu Lys Val Ser Gly Gln His Ile Glu Ile Gln Ala Lys
                245   250   255

Tyr Ile Gly Thr Thr Ile Val Val Arg Gln Val Gly Arg Tyr Leu Thr
                260   265   270

Phe Ala Val Arg Met Pro Glu Glu Val Val Asn Ala Val Glu Asp Arg
                275   280   285

Asp Ser Gln Gly Leu Tyr Leu Cys Leu Arg Gly Cys Pro Leu Asn Gln
    290   295   300

Gln Ile Asp Phe Gln Thr Phe Arg Leu Ala Gln Ala Ala Glu Gly Arg
305   310   315   320

Ala Arg Arg Lys Gly Pro Ser Leu Pro Ala Pro Pro Glu Ala Phe Thr
                325   330   335

Tyr Glu Ser Ala Thr Ala Lys Cys Arg Glu Lys Leu Pro Val Glu Asp
                340   345   350

Leu Tyr Phe Gln Ser Cys Val Phe Asp Leu Leu Thr Thr Gly Asp Val
                355   360   365

Asn Phe Met Leu Ala Ala Tyr Tyr Ala Phe Glu Asp Val Lys Met Leu
    370   375   380

His Ser Asn Lys Asp Lys Leu His Leu Tyr Glu Arg Thr Arg Ala Leu
385   390   395   400

Ala Pro Gly Asn Ala Ala Pro Ser Glu His Pro Trp Ala Leu Pro Ala
                405   410   415

Leu Trp Val Ala Leu Leu Ser Leu Ser Gln Cys Trp Leu Gly Leu Leu
                420   425   430

<210> 29
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Polynucleotide replication primer

<400> 29
tccaagtcag cgactctctc g   21

<210> 30
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Polynucleotide replication primer

<400> 30
tccaagtcag tgactctctc g   21

<210> 31
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene

<400> 31
acctgccgcg gggacctcgc c   21

<210> 32
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene containing polymorphism

<400> 32
acctgccgcg tggacctcgc c   21

<210> 33
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene

<400> 33
gcctgggaaa cctggctgga t   21

<210> 34
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene containing polymorphism

<400> 34
gcctgggaaa gctggctgga t   21

<210> 35
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene

23

<400> 35
tcccttctgt ctttagctca t   21

<210> 36
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene containing polymorphism

<400> 36
tcccttctgt gtttagctca t   21

<210> 37
<211> 20
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene

<400> 37
gaggaggagg ccggggtgga   20

<210> 38
<211> 23
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene containing polymorphism

<400> 38
gaggaggagg aggccggggt gga   23

<210> 39
<211> 21
<212> DNA
<213> Artificial

<220>
<223> Fragment of human HFE2A gene

<400> 39
gcctccctgc cccggaccct t   21

<210> 40
<211> 21
<212> DNA
<213> Artificial

<220>

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<223>   Fragment of human HFE2A gene containing polymorphism

<400>   40
gcctccctgc gccggaccct t                                              21


<210>   41
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   41
atggtcgtcc cccgggggttc t                                             21


<210>   42
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   42
atggtcgtcc accggggttc t                                              21


<210>   43
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   43
cgtcccccgg ggttcttgca t                                              21


<210>   44
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   44
cgtcccccgg cgttcttgca t                                              21


<210>   45
<211>   21
<212>   DNA
<213>   Artificial
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<220>
<223>   Fragment of human HFE2A gene

<400>   45
gtccaaggag cttggcctct a   21

<210>   46
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   46
gtccaaggag attggcctct a   21

<210>   47
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   47
cccccatggc gttgggggcc a   21

<210>   48
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   48
cccccatggc tttgggggcc a   21

<210>   49
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   49
taagaacatg caggaatgca t   21

<210>   50
<211>   21
<212>   DNA
<213>   Artificial

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<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   50
taagaacatg aaggaatgca t                                              21


<210>   51
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   51
gccttctcag ctgaacagga c                                              21


<210>   52
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   52
gccttctcag gtgaacagga c                                              21


<210>   53
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene

<400>   53
agatgctggg gttcctcttt c                                              21


<210>   54
<211>   21
<212>   DNA
<213>   Artificial

<220>
<223>   Fragment of human HFE2A gene containing polymorphism

<400>   54
agatgctggg attcctcttt c                                              21


<210>   55
<211>   20
<212>   DNA
<213>   Artificial
```

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<220>
<223>  Forward replication primer

<400>  55
cacttgagcc caggaatttg                                              20


<210>  56
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  Reverse replication primer

<400>  56
gactcactgc agccttgacc                                              20


<210>  57
<211>  22
<212>  DNA
<213>  Artificial

<220>
<223>  Forward replication primer

<400>  57
gtgtgctaca agtttgccga at                                           22


<210>  58
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  Reverse replication primer

<400>  58
gcttgaaact gggagttgga                                              20


<210>  59
<211>  22
<212>  DNA
<213>  Artificial

<220>
<223>  Forward replication primer

<400>  59
gggaaatggt cccataattc ct                                           22


<210>  60
<211>  19
<212>  DNA
<213>  Artificial
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```
<220>
<223>  Reverse replication primer

<400>  60
cgccctgcca atatgttct                                        19

<210>  61
<211>  22
<212>  DNA
<213>  Artificial

<220>
<223>  Forward replication primer

<400>  61
ggtacttagc ctcgaaatga ga                                    22


<210>  62
<211>  20
<212>  DNA
<213>  Artificial

<220>
<223>  Reverse replication primer

<400>  62
gtgtcacaca actggttggt                                       20
```